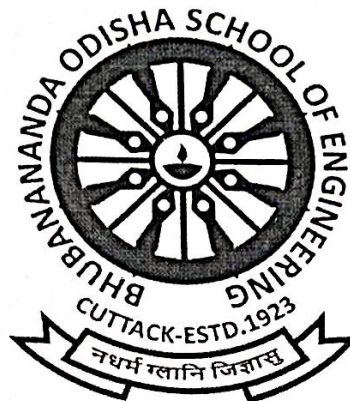


**DEPARTMENT OF APPLIED ELECTRONICS &
INSTRUMENTATION ENGG.**

**LESSON PLAN
OF
ADVANCED CONTROL SYSTEM (TH.1)
6TH SEMESTER
ACADEMIC YEAR: 2025-26 (SUMMER)**

**BY
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Period	Date	Topics to be covered
1	24.12.2025	Unit-1: Fundamental of control system:- Definition of control system, Classification of control system. (open loop and closed loop control system)
2	26.12.2025	cascaded and ratio control system
3	29.12.2025	Block diagram of automatic closed loop control system
4	30.12.2025	Distinguish between open loop and closed and its comparison
5	31.12.2025	Effect of feedback on control system
6	01.01.2026	Standard input signal of control system
7	02.01.2026	Standard input signal of control system
8	05.01.2026	Examples-of electrical negative feedback control system (voltage regulator)
9	06.01.2026	Principle of servo Mechanism (Non-contact type control system)
10	07.01.2026	Revision of Unit-1
11	08.01.2026	Unit-2: Properties of control system:- Transfer Function (T.F) (Open loop and closed system)
12	09.01.2026	Impulse Response of 1 st order control system
13	12.01.2026	Step Response of 1 st order control system
14	13.01.2026	Ramp Response of 1 st order control system
15	15.01.2026	Step Response of 2 nd order control system
16	16.01.2026	Steady State Response: Under damp Response, Over- Damp Response, Critically damp Response
17	19.01.2026	Advantage and Disadvantage T.F, Identification poles and zeros of T.F
18	20.01.2026	T.F Electrical system using Laplace Transform
19	21.01.2026	Revision of Unit-2
20	22.01.2026	Unit-3: Control system components and Mathematically modeling Components of control system with definition.
21	27.01.2026	Potentiometer
22	28.01.2026	DC Motor
23	29.01.2026	DC Motor Types
24	30.01.2026	Servo motor AC Motor
25	02.02.2026	Synchronous and Asynchronous AC motors
26	03.02.2026	Modeling of Electrical system (R, L and C)
27	04.02.2026	Unit-4: Block diagram and S.F.G approach Deformation of basic elements of Block diagram
28	05.02.2026	Characteristics of equation of control system., General Block diagram of feedback with Disturbance
29	06.02.2026	Conical form of closed loop control system in 'S' Domain.
30	09.02.2026	Rule for Block Reduction, Procedure for Reduction of Block diagram
31	10.02.2026	Sample problems for determine equivalent T.F of a Multi-loop control system
32	11.02.2026	Sample problems for determine equivalent T.F of a Multi-loop control system
33	12.02.2026	Basic definition of S.F.G and properties

34	13.02.2026	Mason's gain Formula
35	16.02.2026	Reduction S.F.G to determine overall T.F
36	17.02.2026	Reduction S.F.G to determine overall T.F
37	18.02.2026	Comparison between block diagram and S.F.G Approach.
38	19.02.2026	sample problems for S.F.G for electrical N/W.
39	20.02.2026	Unit-5: Time domain analysis of control system. Basic concept of Time domain Analysis
40	23.02.2026	Distinguish between Linear Time variant and Non-Linear Time Variant.
41	24.02.2026	Definition steady state Response Accuracy, Transient Response, Stability in sensitivity and Robustness
42	25.02.2026	System Time Response
43	26.02.2026	Analysis of state steady error and Definition of various error Co-efficient
44	27.02.2026	Types of input and Steady state error (Step, Ramp and Parabolic)
45	02.03.2026	Parameter of Zeros order, 1st order and 2nd order system and its T.F.
46	05.03.2026	Derivation of Various time and Response Specification : Delay Time , Rise Time , Settling Time
47	06.03.2026	Derivation of Over shoot ,peak over shoot ,Harmonics ,Steady state error.
48	09.03.2026	Unit-6: Frequency characteristics of control system Concept of Frequency Response Analysis and its necessary in control system.
49	10.03.2026	Relationship between Time Response and Frequency Response
50	11.03.2026	Various Method frequency Response Analysis
51	12.03.2026	Stability through pole and zero diagram
52	13.03.2026	Polar plot and various steps of polar plot to determine for stability
53	16.03.2026	Sample Problems on polar plot
54	17.03.2026	Bode plot and various steps to determine for stability
55	18.03.2026	Sample Problems on Bode Plot
56	19.03.2026	Stability in frequency domain analysis .Determination of G.C.F, P.C.F, G.M and P.M using Bode plot
57	20.03.2026	Nyquist Plot and Nyquist Stability Criteria
58	23.03.2026	Stability Concept and Root Locus Method
59	24.03.2026	Routh Array Criteria determination stability of control system
60	25.03.2026	Sample Problems determination stability of the system using various frequency Method
61	26.03.2026	Unit-7: Feedback characteristics approach Effect of various parameter on an open -Loop and Closed Loop control system.
62	30.03.2026	Basic Modern of Feed - back using properties, derivation and Integral.
63	31.03.2026	Effect of overall gain and Stability
64	02.04.2026	Concept of Feed forward and cascaded and Ratio types control system only through Block Diagram
65	06.04.2026	Revision of Unit-7
66	07.04.2026	Unit-8: State variable approach Concept state variable Approach
67	08.04.2026	Various state variable
68	09.04.2026	state model

69	10.04.2026	State models for linear continuous time function
70	13.04.2026	Advantage of state variable Analysis
71	15.04.2026	Revision of Unit-8
72	16.04.2026	Discussion of question Bank
73	17.04.2026	Discussion of question Bank
74	20.04.2026	Discussion of question Bank
75	21.04.2026	Discussion of question Bank


Signature of Faculty


Signature of HOD